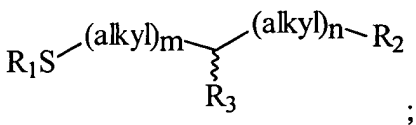
Amendments to and Listing of the Claims:

Please cancel claim 19, without prejudice, amend claims 5 and 7-10, without prejudice, and insert new claims 21-25, as set forth in the following listing of the claims:

1. (Previously Presented) A method of treating a human subject for exposure to ionizing radiation, said method comprising administering to the subject following the subject's exposure to the ionizing radiation an effective amount of a compound of formula I:

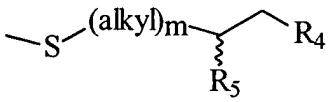
(I)



;

wherein:

R_1 is hydrogen, lower alkyl, a sulfur-containing amino acid or



;

R_2 and R_4 are each individually $SO_3^-M^+$, $PO_3^{2-}M_2^{2+}$, or $PO_2S^{2-}M_2^{2+}$;

R_3 and R_5 are each individually hydrogen, hydroxy or sulfhydryl, where if R_1 is hydrogen, R_3 is not sulfhydryl;

m and n are individually 0, 1, 2, 3 or 4, with the proviso that if m or n is 0, then R_3 is hydrogen; and

M is hydrogen or an alkali metal ion; or

a pharmaceutically acceptable salt thereof.

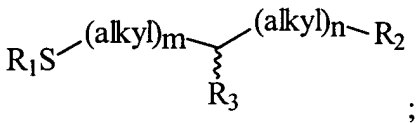
2. (Previously Presented) The method of Claim 1 wherein the formula I compound is 2,2'-dithiobis ethane sulfonic acid, or a disodium salt thereof, and the effective amount administered is from 0.1 mg/kg of body weight to 1,000 mg/kg of body weight of the subject.

3. (Original) The method of Claim 1 wherein the compound is administered orally.

4. (Original) The method of Claim 1 wherein the compound is administered parenterally.

5. (Currently Amended) A method of prophylactically treating a human subject about to undergo exposure to ionizing radiation, said method comprising administering intravenously or orally to the subject prior to being exposed to the ionizing radiation, ~~an amount of~~ a compound of formula I, other than mesna, in an amount and at a time effective to prophylactically protect the subject from adverse effects of the ionizing radiation:

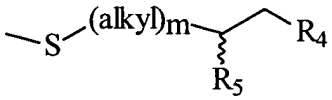
(I)



;

wherein:

R_1 is hydrogen, lower alkyl, a sulfur-containing amino acid or



;

R_2 and R_4 are each individually $SO_3^-M^+$, $PO_3^{2-}M_2^{2+}$, or $PO_2S^{2-}M_2^{2+}$;

R_3 and R_5 are each individually hydrogen, hydroxy or sulfhydryl, where if R_1 is hydrogen, R_3 is not sulfhydryl;

m and n are individually 0, 1, 2, 3 or 4, with the proviso that if m or n is 0, then R_3 is hydrogen; and

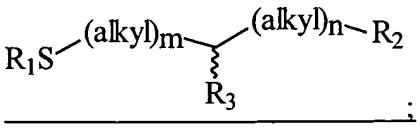
M is hydrogen or an alkali metal ion; or

a pharmaceutically acceptable salt thereof.

6. (Previously Presented) The method of Claim 5 wherein the effective amount of the formula I compound to be administered is 500 mg/m^2 to 40g/m^2 of body surface area of the subject.

7. (Currently Amended) A method of prophylactically treating a human subject about to undergo exposure to ionizing radiation, the method comprising administering intravenously or orally to the subject 15 minutes to 1 hour prior to being exposed to the ionizing radiation, an amount of a compound of formula I effective to prophylactically protect the subject from adverse effects of the ionizing radiation:

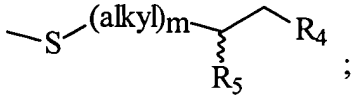
(I)



;

wherein:

R_1 is hydrogen, lower alkyl, a sulfur-containing amino acid or



;

R_2 and R_4 are each individually $SO_3^-M^+$, $PO_3^{2-}M_2^{2+}$, or $PO_2S^{2-}M_2^{2+}$;

R_3 and R_5 are each individually hydrogen, hydroxy or sulfhydryl, where if R_1 is hydrogen, R_3 is not sulfhydryl;

m and n are individually 0, 1, 2, 3 or 4, with the proviso that if m or n is 0, then R_3 is hydrogen; and

M is hydrogen or an alkali metal ion; or

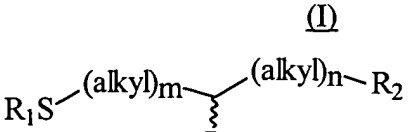
a pharmaceutically acceptable salt thereof ~~wherein the formula I compound is administered to the subject at 15 minutes to 1 hour prior to the radiation exposure~~.

8. (Currently Amended) The method of Claim ~~5~~ 7 wherein administration is by intravenous infusion.

9. (Currently Amended) The method of Claim ~~5~~ 7 wherein administration is oral.

10. (Currently Amended) ~~The method of Claim 5~~ A method of prophylactically treating a human subject about to undergo exposure to ionizing radiation, the method comprising administering intravenously or orally to the subject 15 minutes to 1 hour prior to being exposed to the ionizing radiation, an amount of a compound of formula I effective to prophylactically protect the subject from adverse effects of the ionizing radiation:

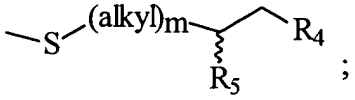
(I)



;

wherein:

R_1 is hydrogen, lower alkyl, a sulfur-containing amino acid or



;

R_2 and R_4 are each individually $SO_3^-M^+$, $PO_3^{2-}M_2^{2+}$, or $PO_2S^{2-}M_2^{2+}$;

R_3 and R_5 are each individually hydrogen, hydroxy or sulfhydryl, where if R_1 is hydrogen, R_3 is not sulfhydryl;

m and n are individually 0, 1, 2, 3 or 4, with the proviso that if m or n is 0, then R_3 is hydrogen; and

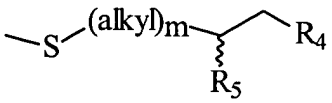
M is hydrogen or an alkali metal ion; or

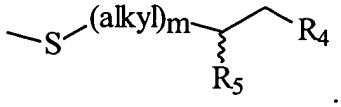
a pharmaceutically acceptable salt thereof, and wherein an additional effective dose of the formula I compound is administered about 2 hours after conclusion of the radiation exposure.

11. (Original) The method of Claim 10 wherein additional effective doses are administered to the patient about every 4 hours after the first-mentioned additional effective dose.

12. (Original) The method of Claim 10 wherein the additional effective dose is administered orally.

13. (Original) The method of Claim 10 wherein the additional effective dose is administered by intravenous infusion.

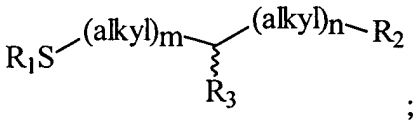
14. (Original) The method of Claim 1 wherein R_1 is lower alkyl, a sulfur-containing amino acid or  .

15. (Original) The method of Claim 5 wherein R_1 is lower alkyl, a sulfur-containing amino acid or  .

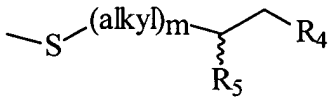
16. (Previously Presented) The method of Claim 15 wherein the formula I compound to be administered is 2,2'-dithiobis ethane sulfonic acid, or a disodium salt thereof.

17. (Previously Presented) A method of protecting a human subject against ionizing radiation, the method comprising administering to the subject an amount effective to protect the subject from adverse effects of the ionizing radiation of a compound of formula I, other than mesna:

(I)

 ;

wherein:

R_1 is hydrogen, lower alkyl, a sulfur-containing amino acid or  ;

R_2 and R_4 are each individually $SO_3^-M^+$, $PO_3^{2-}M_2^{2+}$, or $PO_2S^{2-}M_2^{2+}$;

R_3 and R_5 are each individually hydrogen, hydroxy or sulfhydryl, where if R_1 is hydrogen, R_3 is not sulfhydryl;

m and n are individually 0, 1, 2, 3 or 4, with the proviso that if m or n is 0, then R_3 is hydrogen; and

M is hydrogen or an alkali metal ion; or

a pharmaceutically acceptable salt thereof.

18. (Previously Presented) The method of Claim 17, wherein the compound is 2,2'-dithiobis ethane sulfonic acid, or a disodium salt thereof.

19. (Canceled)

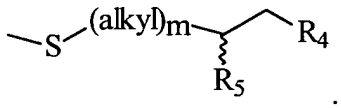
20. (Previously Presented) The method of claim 2 wherein the effective amount administered is from 20 mg/kg of body weight to 1,000 mg/kg of body weight of the subject.

21. (New) The method of Claim 5 wherein administration is by intravenous infusion.

22. (New) The method of Claim 5 wherein administration is oral.

23. (New) The method of Claim 17 wherein administration is by intravenous infusion.

24. (New) The method of Claim 17 wherein administration is oral.

25. (New) The method of Claim 17 wherein R_1 is lower alkyl, a sulfur-containing amino acid, or 

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